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POWERBOX Railway Line ENAR150D Series 150W Dual Output DC/DC Power Supply

Features

DC/DC power supply with wide input voltage range for railway / rolling stock applications

Rugged, low profile

Input voltage options: 110VDC (77-137.5VDC), 24VDC (16.8-30 VDC)

Output: 2x24V or 2x12V 150W

Remote on/off

DC OK signal

Conformal coating

Reverse polarity protection

Input

Nominal voltage	See table 1
DC input range	See table 1
Inrush current	Max 5 times nominal input current after 0.1ms
Isolation voltage	Input to output 2100VAC Input to GND (PE) 1500VAC Output to case 1000VAC Output to output 500VDC
Reverse polarity	Reverse polarity protection functionality

Output

Output voltage	See table 1
Maximum power	150W
Line regulation	1% max.
Load regulation	1% max in load range 10-90% of max load level
Efficiency	Up to 93%
Temperature coefficient	0.3 to 0.4V
Transient response	0.5ms within 2% for a load change 20 to 90% or 90 to 20%. Risetime and falltime 5A/μs
Ripple voltage	Typical 0.5% p/p (20MHz)
Current limit	115% of load. Auto recovery
Overvoltage protection	Operates at 120-130% of nominal voltage level
Short circuit protection	Protection for continuous operation
Overtemp. protection	Automatically limiting available output power Automatic recovery
Output power	150W in ambient temperature class T2, (-40 to +55°C) according to EN50155:2007 140W in ambient temperature class TX, (-40 to +70°C) according to EN50155:2007
Max capacitive load	Start up and operational with capacitive load <15mF
Specific protection	Common input power limitation Individual output short circuit protection Individual internal temperature protection circuit



Parallel operation Passive load sharing in parallel operation
Approx. load sharing level: 70%

Output configuration The two outputs are individually floating and can be connected as independent symmetrical, parallel as series outputs

Signals

DC OK signal	DC OK output signal indicate that output voltage level will be within nominal range
Inhibit signal	Inhibit input signal turn the DC/DC unit on/off
LED indicators	Green LED indicates output voltage level within range

Environmental

Operating temperature	Ambient air temperature -40°C to +70°C, class TX according to EN50155:2007 Some additional cooling needed above +55°C
Storage temperature	-55°C to +85°C
Case temperature	+100°C max.
Cooling	Natural convection cooling
Humidity	95% RH max.
Shock and vibration	IEC61373 catagory 1, class B
Compliance	RoHS and REACH
Fire protection	Approved to EN 45545-2:2020
MTBF	500,000 hours min at +45°C
Technical lifetime	Minimum 15 years at ambient temperture +45°C and 80% load level

Connector

Connector type	Male connector type H15 acc. to DIN41612
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General

Mechanical	Euro cassette according to IEC60297-3
Mechanical protection	Conformal coating
Size (HxWxD)	111mm x 18.5mm x 162mm
Weight	450g

EMC Standards

EMC	EN50155, EN50121-3-2:2015
Conducted emission	According to EN50121-3-2:2015 and EN55011
Radiated emission	According to EN50121-3-2:2015 and EN55011
ESD	6kV contact discharge. 8kV air discharge Test setup EN61000-4-2:2009.
Immunity to radio frequency electromagnetic field	EN61000-4-3:2006+A1+A2. 20V/m 80-1000MHz and 1-2.5GHz
Fast transients	EN61000-4-4:2012
Surge	EN61000-4-5:2006
Immunity to conducted RF	EN61000-4-6:2009

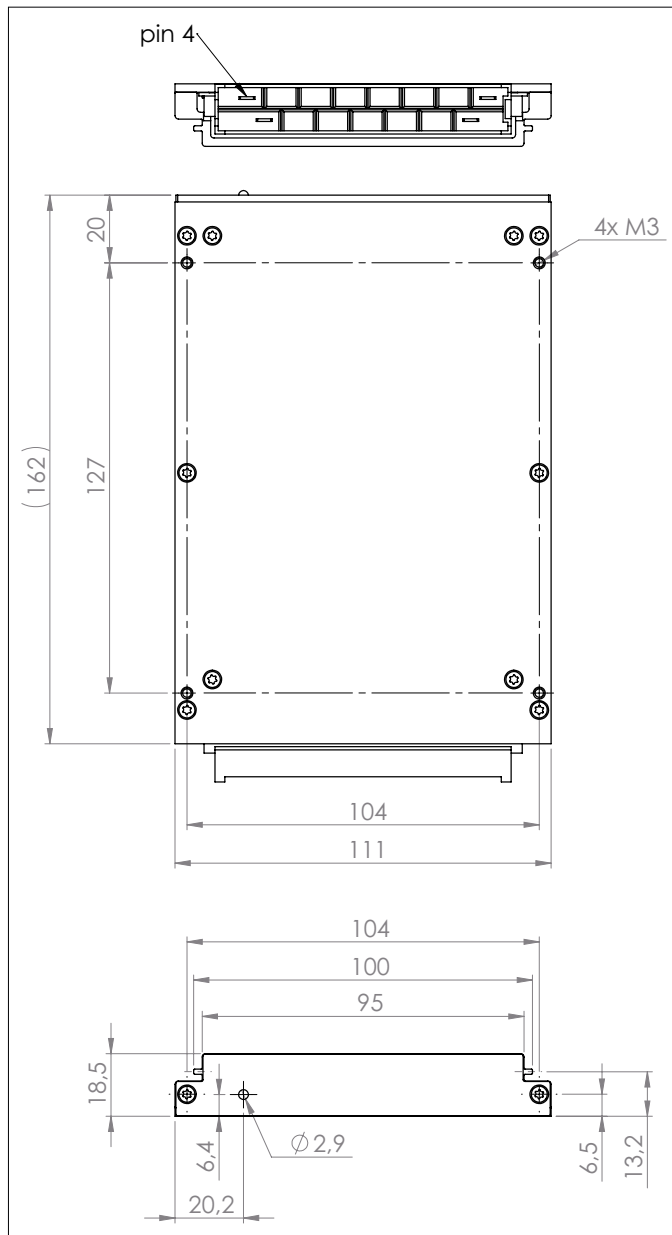


Table 1

Model Number	Nom Input Voltage	Output 1	Output 2
ENAR150D110/2x24	110VDC	24V/3,12A	24V/3,12A
ENAR150D110/2x12	110VDC	12V/6,25A	12V/6,25A
ENAR150D24/2x24	24VDC	24V/3,12A	24V/3,12A
ENAR150D24/2x12	24VDC	12V/6,25A	12V/6,25A

Possible Output Configurations

Configuration	Definition	Note
Independent output conf.	Output 1 and output 2 connected to separate load. Galvanic isolation between output 1 and output 2.	Load range 2% to 100% Max 75W load per output*
Symmetrical output conf.	Outputs configured together with common ground. Vo1- pin connected to Vo2+ pin One load connected to Vo1+ and Vo1-/Vo2+ One load connected to Vo1-/Vo2+ and Vo2-	Load range 2% to 100% Max 75W load per output*
Parallel output conf.	Outputs connected together. Vo1+ pin connected to Vo2+ pin Vo1- pin connected to Vo2- pin	Load range 2% to 100% Max 150W output load
Series output conf.	Outputs connected together. Vo1- pin connected to Vo2+ pin One load connected to Vo1+ and Vo2-	Load range 2% to 100% Max 150W output load

*) Load range for output 1 is 2% to 100%.

Load range for output 2 is 2% to 100% if load at output 1 is above 20% (15W)

If load at output 1 is below 20%, load for output 2 needs to be equal or less than load for output 1.

Output Connector Pin Out

Description H15 DIN1612	Pin No	Signal
	4	+Vo1
	6	+Vo2
	8	-Vo1
	10	-Vo2
	12	NC
	14	NC
	16	NC
	18	NC
	20	NC
	22	DC OK +
	24	DC OK -
	26	PE ²⁾
	28	Inhibit control ³⁾
	30	+Vin
	32	-Vin

2) Leading pin (pre-connecting).

3) If not used, connect to pin 32.

POWERBOX **Railway Line**
ENAR150D Series
150W Dual Output
DC/DC Power Supply



Wall Mounting
For fixed mounting of an ENAR150D converter on a wall or on the wall of a metal box. Be sure that the surface the plate is mounted to can absorb heat as the surface facing the wall /box dissipate most of the heat from the converter.



Connector Locking Block
Connector blocks used to fix the connector by the ENAR150D, securing the connector for any mechanical stress.



Front Plate
Front plate kit for mounting ENAR150D in DIN 41612 compatible euro card racks.



Connector
15 pol connector for DIN41612, female with case clamp.

Accessories Available

ACCM1101A	Wall Mounting Kit
ACCM1102A	Connector Locking Block Kit
ACCM1103A	Front Plate Kit
ACCX2001A	Connector

For further details, see separate datasheet.